# AT-201
# AT-401 HAND-HELD Transceiver

# USER'S MANUAL

ADI Communications

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The VHF/UHF Hand-Held Transceiver is engineered and manufactured with highest quality of microelectronics technology and workmanship. We are confident that you will be entirely satisfied with the superb performance and reliability of this Hand-Held (H/H) Transceiver.

Our very strict quality control and inspection ensure that each transceiver unit have left the factory-in perfect condition. However, if your transceiver does not operate properly or if you find any difficulty in its operation, contact your dealer immediately.

Read this instruction carefully before use to make the unit perform fully and last long.

(THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES OPERATION IS SUBJECT TO THE CONDITION THAT THIS DEVICE DOES NOT CAUSE HARMFUL INTERFERENCE.)


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# BEFORE OPERATION

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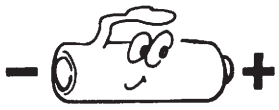
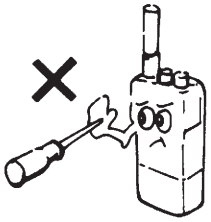
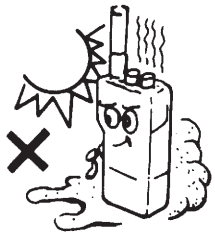
**1.** Make sure that batteries are inserted.with correct polarity.



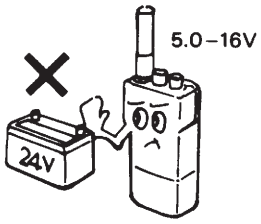

**2.** Do not disassemble and tamper with cores and trimmers The Transceiver is produced under strict control and fully adjusted.



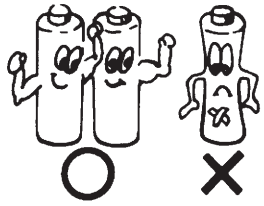
**3.** Keep out of high temperature, humidity and dust.



**4.** Apply 5.0 to 16.0V DC power supply only

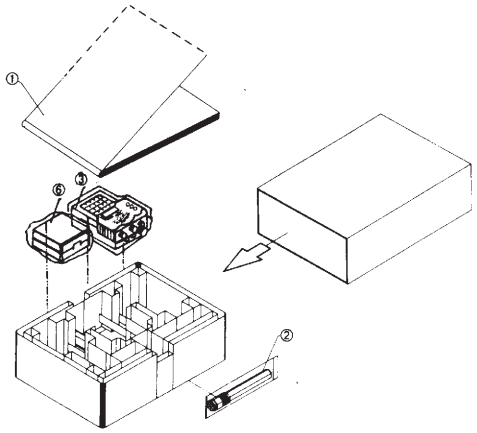


**5.** Do not use a new and used batteries together.



**6.** Do not dispose a battery in fire.

# EQUIPMENT SUPPLIED




The Transceiver is normally supplied with the items listed below. When unpacking the unit carton check the all items are included. If items are missing, please notify your dealer immediately.

| | |
|---|---|
| ①User's Manual | ⑤ Hand Strap (Installed) |
| ② Antenna | ⑥ Battery Pack |
| ③ Jack Cover | * ⑦Wall Charger |
| ④ Belt Clip (Installed) | **⑧ DTMF |
| | **⑨ Tone Squelch Unit |

* Optional item, it may not be shipped with your radio, please consult your local dealer.

** DTMF, Tone Squelch Unit (CTCSS) is installed for North America.

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This is a highly versatile, yet compact hand-held transceiver that is built and tested to stringent specifications. The following features are built into your Transceiver.

☆ Smallest and lightest transceiver in this class.
Dimensions: 83.5mm (height)x55mm(width)x31mm(depth) (excluding protrusions and battery case).
Weight: 185g (excluding battery case and antenna)

☆ Paging function is available when an optional DTMF is installed. This feature allows you to page one specific station or all group stations via a 3-figured DTMF signal. When a paging signal is received, a beep sound and the display will inform you that someone has you paged. The paging station can be identified by means of its individual code.

☆ Code Squelch operation is available with when an optional DTMF is installed. The Transceiver will hear only stations using the identical code.

☆ Tone Squelch operation is available with an optional CTCSS. The Radio will hear only stations using the specific tone frequency. Tone frequencies can be selected via the rotary channel selector.

☆ DTMF and CTCSS can used together.

☆ An optional High Power Rechargeable Battery Pack or an external power supply of 13.8V enable powerful transmission.

☆ A wide range of acceptable external power supply voltages (5 to 16V DC) allows you to power it from an automobile battery.

☆ High Sensitivity.

☆ Up to 40 memory channels are available.

☆ Independent tone frequencies and offset frequencies can be programmed in any memory.

☆ Internal Dual-Watch allows the Transceiver to watch.
- the selected dial-frequency and the stored frequency in memory address M1;
- the selected dial-frequency and any other memory frequency
- the selected dial-frequency and each memory frequency under scanning in sequence. (up to 40 channels)
- the selected dial-frequency and call frequency

☆ Either Pause or Busy scan functions can be selected. Scanning the dial-frequency provides a VFO full band scan. Scanning of a memory frequency provides all memories scan.

☆ A single pushbutton press opens the squelch so you can easily check the volume setting.

☆ A Battery-Save function allows you to reduce the current drain during receiver standby.

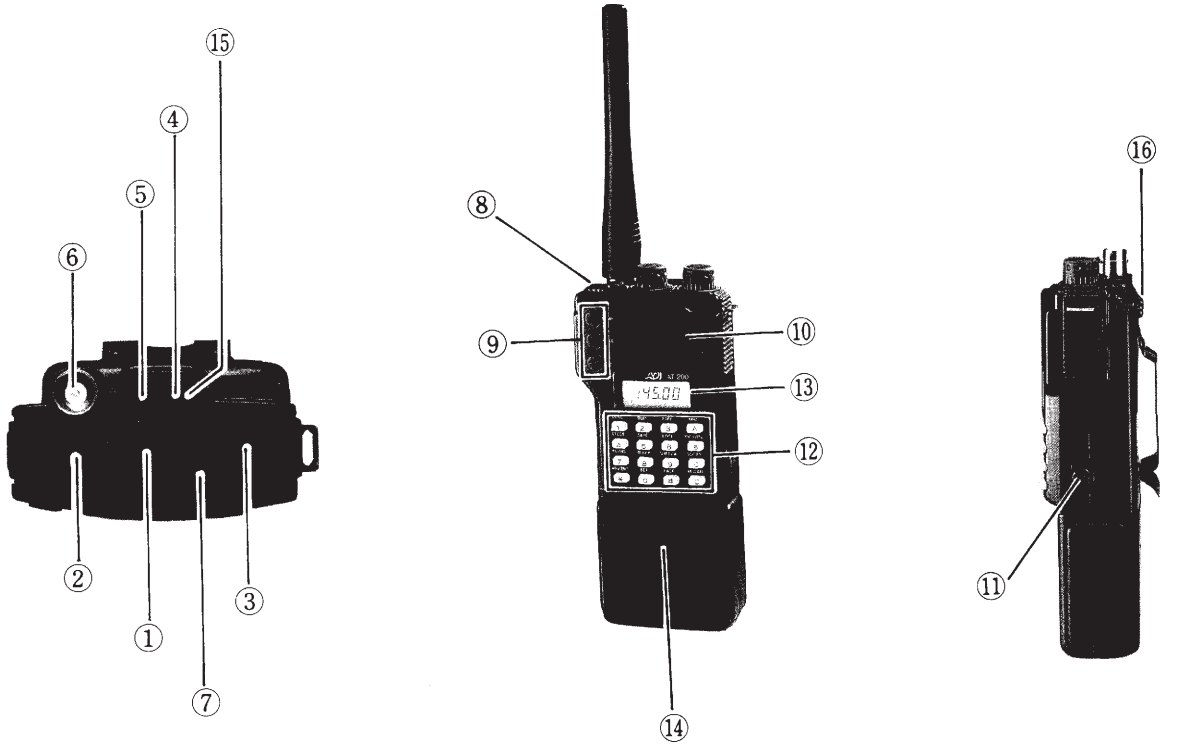
- ☆ An Auto-Power Off function reduces the current drain if you forget to turn the transceiver off.
- ☆ Frequencies can be entered directly from the keyboard or via a rotary channel selector.
- ☆ A Function button allows you to change the frequency with a 1MHz step when you turn the rotary channel selector.
- ☆ Selected frequencies and operating mode may be locked to prevent inadvertent key operation.
- ☆ PTT button may be locked to prevent inadvertent transmission.
- ☆ A full line-up of optional accessories.

# OPTIONAL ACCESSORIES

We offer various accessories to increase your communication efficiency. Consult your dealer for further details. (Some items below might be shipped with your radio as standard accessories)

DTF145 DTMF Encoder/Decoder
RBP072 Standard Rechargeable Battery Pack (7.2V, 700mAh)
RBP120 High Power Rechargeable Battery Pack (12V, 600mAh)
CHA072 AC Charger (for RBP072)
CHA120 AC Charger (for RBP120)
PCA145 Power Cable for an-automobile
SBC145 Standard Battery Case (for 6 size AA batteries)
CMP145 Compact Microphone/Speaker with PTT
DTC120 Desk Top Charger (Rapid Charger)(for RBP072, RBP120)
CTS145 CTCSS encoder & decoder

# CONTROLS AND CONNECTIONS



## ① Power On-OFF Switch/Volume Control

This is to turn the power on and off and to control the volume. Rotate the control clockwise to turn the power on,and rotate it clockwise further to increase the volume. The Squelch Off button should be held depressed or the Squelch Control rotated fully counterclockwise while controlling the volume.

## ② Squelch Control

This is to control white noise. Rotate it clockwise slowly and set the control where the noise stops.

**NOTE:**

(1) DO not rotate the control clockwise too far.

(2) The control should be placed where the white noise is not heard during following operations; Scanning, Dual-Watch, Battery-Save, Paging and Code Squelch.

(3) Adjust the control with the channel which is not receiving the signal.

## ③ Rotary Channel Selector

This is to select the transmit/receive frequency. It is also used to change the tone frequency, channel step and memory address number. Rotate the selector clockwise to increase the frequency and counterclockwise to lower it. The interval by which the frequency changes is referred to as "Channel Step". The Channel Step which is initially set to 10kHz can be changed to 5, 12.5, 20, 25 or 50kHz. (Refer to Changing the Channel Step, contents14).

## ④ External Speaker Jack: S

This is to connect Microphone/Speaker or Head Set with PTT. Any other external speaker with 8 ohm load or an earphone can be connected. A built-in speaker is disabled when an external speaker is connected to this jack.

## ⑤ External Microphone Jack: M

This is to connect Microphone Speaker Head Set with PTT.

## ⑥ Antenna Jack: ANT

This is a BNC connector to connect the attached helical antenna.

## ⑦ Transmission/Battery Indicator

This indicator lights up in red when the transmitter is keyed. When weakened batteries, it becomes darker recommending battery replacement.

## ⑧ Function Button

Special functions are available by pressing each button on the front panel with the function button held depressed.

## ⑨ PTT Button

For transmission, press this button and speak into the microphone. Release the PTT button to receive. When operated with Head Set with PTT, press the PTT button on Head Set to transmit.

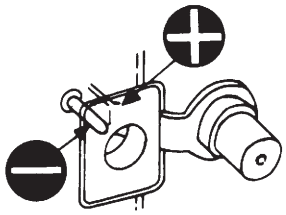
## ⑩ Lock Button

This is to lock the battery case. Push up this button to remove the battery case.

## ⑪ External Power Connector: DC IN

This is for Power Cable for an Automobile (PCA145). When PCA145 is connected, power is not supplied from the battery

**NOTE:**
Connect the PCA145 only to this connector, as its plug is the peculiar one.



A pin at the center is negative

**CAUTION:**
Turn the power switch off before connecting the cables. Nominal input voltage for this H/H Transceiver is from 5V to 16V DC. Do not apply voltage beyond the range.

## ⑫ Front Panel

**A: Squelch Off Button: SQL**

This button opens the radio squelch. While this button is held depressed, the squelch operation is turned off and the sound is heard from the speaker regardless of the position of the squelch control.

**B: Call Button: CALL**

Press this button to switch the operating frequency and call frequency.

**C: Lamp Button: LAMP**

Press the LAMP key to illuminate the LCD and keypad. Pressing this switch only will activate the lamp for 5 seconds. Pressing Function and LAMP at the same time, turns the lamp on full time.

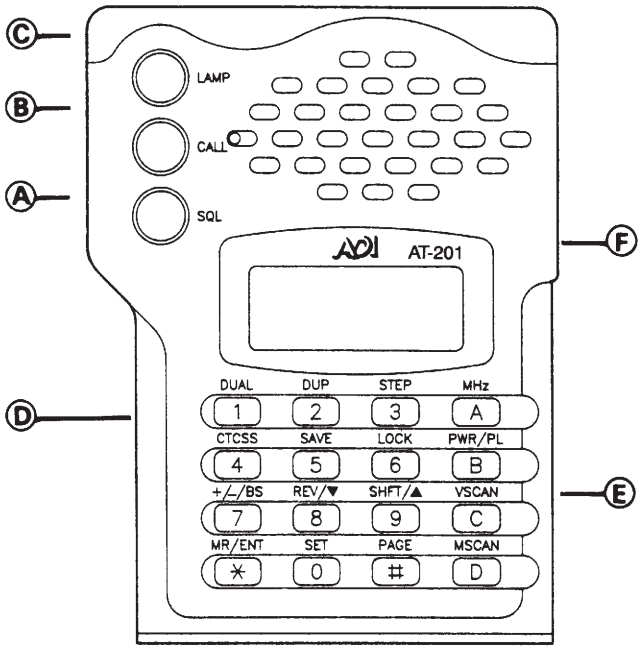
**D: Speaker**

This is a built-in speaker, which is disabled when the external speaker is connected.

**E: Microphone**

This is a built-in condenser micrpohone.

**F: Key buttons for various operations**




## ⑬ Display

The display indicates followings.

I. Frequency
II. Channel Step
III. Special Functions
PAG, DUAL, APO, DUP, F.L, T.SQ, P.L, C.SQ, S.B, +, -
IV. Memory Address Number
V. Memory Mode
VI. Scanning
VII. Shift Frequency
VIII. Busy Scanning
IX. S-meter and RF Output Indicator
It functions as a S-meter when receiving the signal and idicates the RF output power while transmitting. "1" is indicated regardless the input signal when the squelch control is rotated fully counterclockwise.

### ⑭ Battery Case

Depending on what model radio you purchased. The AT-201 may have come with a 7.2 Volt NiCad. a 12 Volt NiCad or a battery pack for 6 AA batteries.

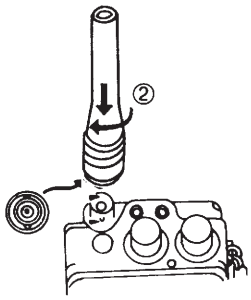
### ⑮ Jack Cap

Cover the jacks with this cap when the external microphone and external speaker are not in use.

### ⑯ Belt Clip Holder

The belt clip is fixed to the Transceiver at the factory. Remove the belt clip when unnecessary and fasten the screws solely.

**1.** Install the included antenna.

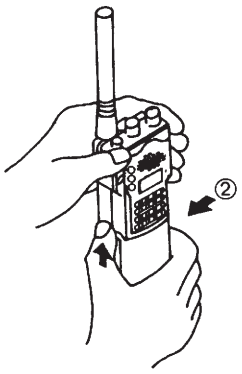



**2.** Detach the battery case

a) Hold the Transceiver and place your thumb on the Lock button.

b) Push up the Lock Button and pull the battery case as illustrated to clear the lock.

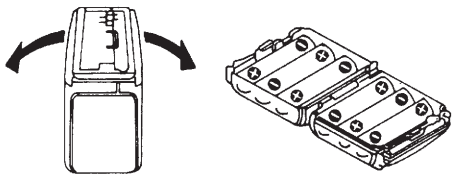
c) Pull the battery case further and remove it from the Transceiver.



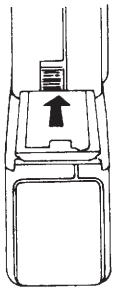
**3.** If you are using the battery pack for 6 AA battery, insert size AA batteries into the battery pack. Be sure that the batteries are inserted with correct polarity.

**NOTE:**

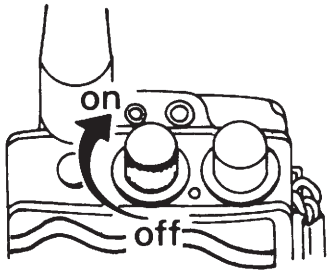
**Apply the new batteries only.**



**4.** Attach the battery to the Transceiver. Engage the battery on the slot of the bottom of the Transceiver and push the battery case until it latches in the proper position.



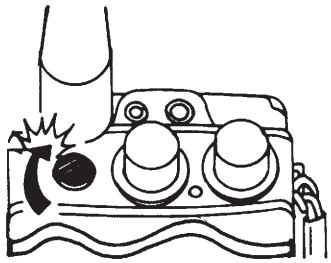
**5.** Turn the power switch on and set the volume control to a comfortable listening level.



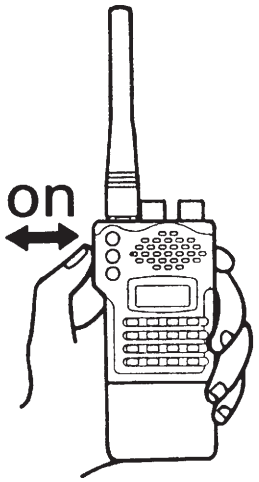

**6.** Rotate the squelch control clockwise slowly until the noise from the speaker stops.

**NOTE:**

**Do not rotate the control clockwise too far. Excessive squelch reduces the radio sensitivity and may prevent reception.**



7. Press the PTT button to transmit and release it to receive



# OPERATION

## Operating Controls

Key buttons on the front panel function as described below. When operated correctly a high short beep tone will be generated. A low beep tone will warn you the wrong operation.

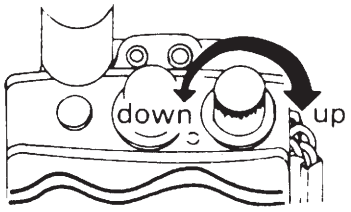
| Button | Independent Function | Function + Button |
|---|---|---|
| CALL | Switches the operating frequency and call frequency | |
| LAMP | Illuminates the LCD and keypads for 5 seconds | Turns on/off the lamp full time |
| A/MHZ | Turns on/off the 1MHz tuning step operation | Turns on/off the 1 MHz Turning step operation |
| B/PWR/PL | Switches the transmit power level | Disables the PTT button |
| C/VSCAN | Scanning operation | Switches the memory channel group |
| D/MSCAN | Turns on/off the memory scan | Sets the MS.M scan frequency and turns on/off the MS.M scan |
| */MR/ENT | Switches the operating frequency and the memory frequency, and accesses the operating frequency | Store or release the memory frequencies in memory mode |

| Button | Independent Function | Function + Button |
|---|---|---|
| #/PAGE | Turns on/off and switches the paging and code squelch operation | Recalls the stored code in memory for paging and code squelch operation |
| 0/SET | Input "0" | Selects the set mode |
| 1/DUAL | Input "1" | Turns on the dual watch |
| 2/DUP | Input "2" | Turns on/off autorepeater mode |
| 3/STEP | Input "3" | Recall the channel step |
| 4/CTCSS | Input "4" | Turn on/off the tone squelch operation |
| 5/SAVE | Input "5" | Turns on/off the save function |
| 6/LOCK | Input "6" | Turns on/off the frequency lock function |
| 7/+/-/BS | Input "7"<br>•While scanning, switches the pause scan and busy scan | Turns on/off the repeater operation |
| 8/REV/▼ | Input "8"<br>•Scans downwards | Exchanging the transmit and receive frequency during repeater operation |
| 9/SHIFT/▲ | Input "9"<br>•Scans upwards | Setting a shift frequency |

## 1 Setting an Operating Frequency

### ① With a rotary channel selector

You can change the operating (transmit and/or receive) frequency by rotating the rotary channel selector. As the selector rotated, the displayed frequency changes in 10kHz steps. It changes in 1MHz steps when rotated with the function button held depressed.




**Procedure**

Rotate the rotary channel selector clockwise to increase the displayed frequency and counter clockwise to decrease it.

**Information**

- The frequency step rate as the selector rotated is referred to as a channel step.
- Although the channel step is initially set to 10kHz at the factory,you may use any one of six options, 5, 10, 12.5, 20, 25 and 50kHz. How to select the channel step is outlined under "Changing the Channel Step", contents.

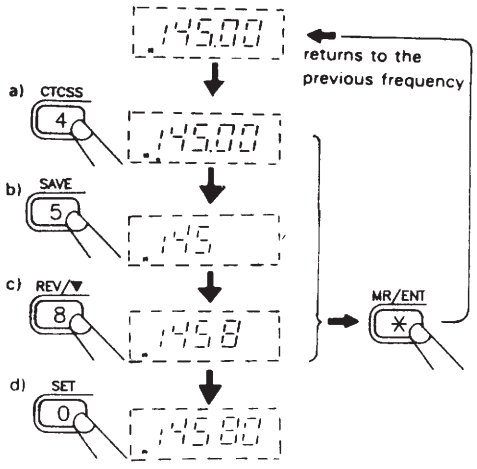
### ② With buttons on the front panel

You can change the operating frequency with numeral buttons of "0" to "9".

**Procedure**

**Example:To set 145.80MHz**

**a) a 10MHz figure.....press"4"**
**[14] will be displayed.**
**b) a MHz figure.....press"5"**
**[145] will be displayed.**
**c) a 100kHz figure.....press"8"**
**[145.8] will be displayed.**
**d) a 10kHz figure.....press"0"**
**[145.80] will be displayed.**




When four numeral buttons are pressed correctly, a long beep tone will be generated informing you that frequency setting is complete.

**Information**

If you want to cancel the setting in the middle of the operation, press the */MR /ENT button. The display will return to the previous frequency.

**This is called the dial-frequency mode.**

**Expanding the receive frequency:**

For receiving 130-170 MHz.

**Procedure**

1. Turn power off.
2. Press [3]+[CALL] while turning power back on.

**Information**

**Returning the receiving range to normal:**

**CAUTION!** This resets the radio and erases all memories.

Press [FUNC]+[CALL] while turning power back on.

## Changing the memory to the 40 channel mode

This function changes the memory size from 20 to 40 channels. Turn off the radio. Press and hold [CALL] and [6] at the same time. Turn on the radio.

**Note:** "6" is display. Turn radio off, then back on. Normal display returns. Call channel can not be changed while in 40 channel mode. If you wish to use the call channel in 40 channel mode, you must program it before you put the radio in 40 channel mode.

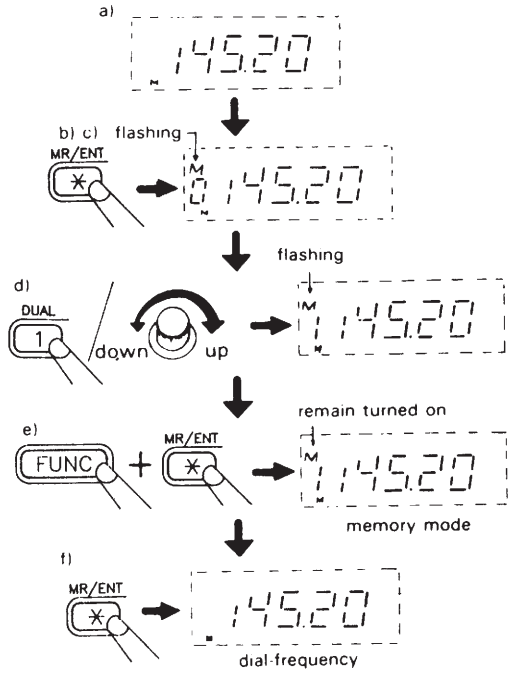
## 2 Programming Frequency in Memory [*/MR/ENT Button]

Up to 40 memories may be programmed. They are saved under the addresses 0 through 39 (in 40 channel mode) or 0 through 9 and $\overline{0}$ through $\overline{9}$ (in 20 channel mode).

**Procedure**

(When the memory is vacant)

1. Select VFO mode (no "M" in display)
2. Input frequency, tone, and offset (if needed) and press [MR/ENT]
3. Select memory 0-9, $\overline{0}$-$\overline{9}$, or 0-39 by rotating dial knob.
4. Hold [FUNC] and press [MR/ENT] to store the memory. A long beep tone notifies you that the operation is complete.



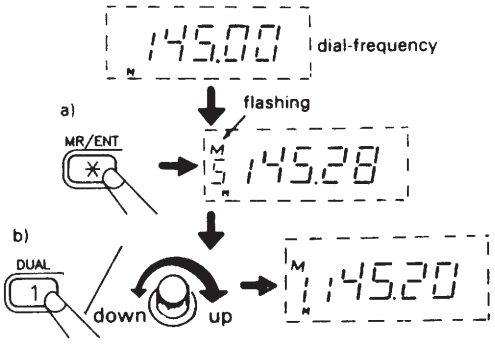
## 3 Recalling a Memory Frequency [*/MR/ENT Button]

**Procedure**

### ① Example: To recall "M1"

**a)** Press the */ MR /ENT button for the memory mode.

**b)** Press the number 1 button or rotate the channel selector for the address number "M1". The stored frequency under "M1" will be displayed.




### ② Example: To recall the memory frequency successively

Keep the Transceiver in the memory mode. Press the numeral button or rotate the channel selector for the desired address number. The stored frequency under the address number will be displayed.

**Information**

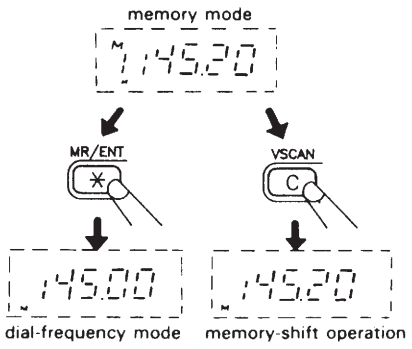
- In 20 channel mode the numeral button can only recall the address number within either M or $\overline{M}$ memory groups. When the recalled address number is vacant (i.e. no frequency is stored), "M" on the display will flash and the dial-frequency will be indicated.
  The */ MR /ENT button switches the dial-mode and memory mode.

## 4 Moving a Memory Frequency to the VFO [C/VSCAN Button]

In the memory mode the [C/VSCAN] button will put the current operating frequency (including offset and tone) into the VFO.

**Information**

If you wish to return to VFO mode and do not want to use the current operating frequency, press the [MR/ENT] button, this will return you to whatever frequency was last in the VFO.




## 5 Changing a Memory Frequency

The stored frequency in memory can be changed by overwriting the new figure.

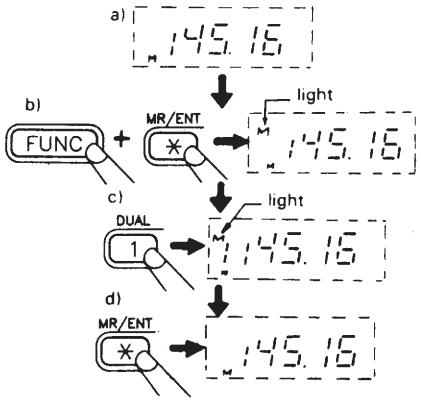
**Example: To change the memory frequency of 145.20MHz under M1 to 145.16MHz.**

**CAUTION:**

Pressing Button [FUNC] and [CALL] while turning power on will reset the radio. After reset, all stored memories will be relseased and all parameters will be reset to factory default values.

**Procedure**

**a)** Set the displayed dial-frequency to 145.16 MHz with the numeral buttons or the rotary channel selector.
**b)** Press the */ MR /ENT button while pressing the Function button. "M" will appear on the display.
**c)** Press the "1" button for the address number "M1" The long beep tone will be generated informing you that the memory frequency is altered.
**d)** Press the */ MR /ENT button to return to the dial-frequency mode when the operation is complete.
**e)** Please try to change the memory frequency of "M1" again to 145.20 MHz
**f)** In 40 channel mode, memory frequency can only changed by procedures in page 16.



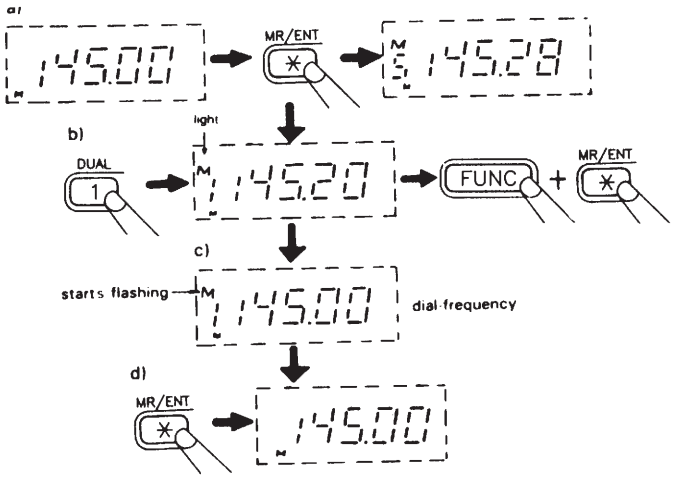

## 6 Deleting a Memory Frequency [*/MR/ENT Button]

Follow the procedure below to delete the programmed frequency in memory.

**Procedure**

**Example: To delete the frequency programmed under "M1".**

**a)** Press the */ MR /ENT button. The memory address number used lastly and concerned frequency will be displayed.
**b)** Press the */ MR /ENT button while pressing the Function button. The long beep tone will be generated and "M" on the display will start flashing. The programmed frequency under "M1" is now deleted, (see 2 PROGRAMMING FREQUENCY IN MEMORY).
**c)** The dial-frequency will be displayed while the memory mode is sustained.
**d)** Press the */ MR /ENT button or C/VSCAN button to release the memory mode.
**e)** The Transceiver should be set to the dial-frequency mode as the operation completed.

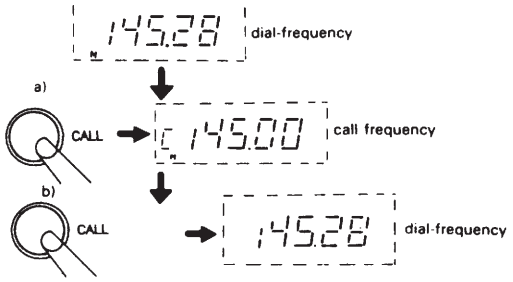



## 7 Recalling a Call Frequency [Call Button]

**Procedure**

**a)** Press the call button for the call frequency mode "C" and the call frequency will be displayed.

**b)** Press the call button in call frequency mode "C" and call frequency will disappear, and the dial-frequency will be displayed.




**Information**

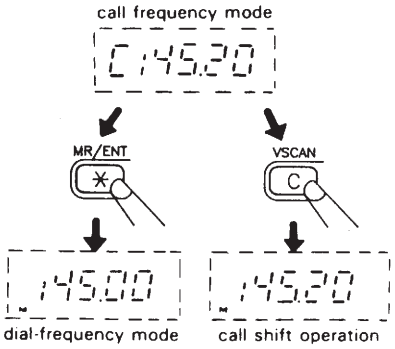
- In call frequency mode, the rotary channel selector is disabled.
- Call frequency essentially is a special kind of memory frequency.

## 8 Moving a Call Frequency to the VFO [C/VSCAC Button]

Press the C/VSCAN button in the call frequency mode. The Transceiver will be set to the dial frequency mode with the displayed call frequency remain unchanged. That is, the displayed call frequency becomes the operating frequency. This is called the call-shift operation.

**Information**

Press the */ MR/NET button if you do not want call-shift operation. The dial-frequency displayed before the Transceiver is set to the call frequency mode will be returned.



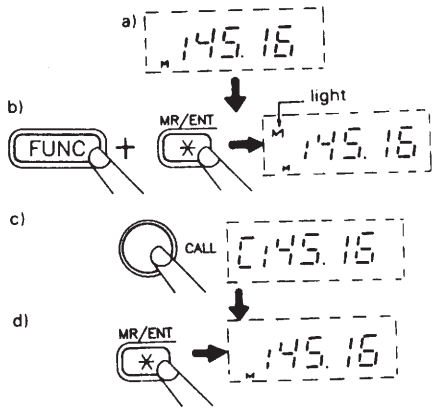

## 9 Changing a Call Frequency

The stored frequency in call memory can be changed by overwriting the new figure.

**Example: To change the call frequency to 145.16MHz.**

**Procedure**

**a)** Set the displayed dial-frequency 145.16 MHz with the numeral buttons or the rotary channel selector.
**b)** Press the */ MR /ENT button while pressing the Function button. "M" will appear on the display.
**c)** Press the call button. The long beep tone will be generated informing you that the call frequency is altered.
**d)** Press the */ MR /ENT button to return to the dial-frequency mode when the operation is complete.




**Note: The call channel may only be programmed in 20 channel mode.**

## 10 Scanning [C/VSCAN Button and D/MSCAN Button ]

The following buttons have special functions during scanning

| Button | During dial scanning | During memory scanning |
|---|---|---|
| 6/LOCK | Toggly switches 1 MHz band scan and partial band scan | Toggly switches all memory scan and 1 band memory scan |
| 7/+/-/BS | Switches pause scan and busy scan(B is indicated on the display during busy scan) | Switches pause scan and busy scan(B is indicated on the display during busy scan) |
| 8/REV/▼ | Decreases the frequency by one step and scans downwards | Decreases the memory address number by one step |
| 9/SHIFT/▲ | Increases the frequency by one step and scans upwards | Increases the memory address number by one step |

**Information**

No indication is displayed for the above functions except the busy scan

## ① Scanning Method

Either pause scan or busy scan can be selected

- **Pause scan**

  Pause scan ceases scanning when a signal is received Scanning will then resume five seconds later or when the signal disappears, whichever occurs first.

- **Busy scan**

  Busy scan stops scanning when a signal is received, but scanning resumes 4.5 seconds after the signal disappears (The Transceiver is initially set to pause scan)

## ② Various Scanning

This Transceiver is capable of following scans

- **Dial-frequency scan**

(1) 1 MHz band scan

To scan the band from one end to the other within 1 MHz

(2) Partial band scan

Scans only a selected group of frequencies

- **Memory frequency scan**

(1) All memory scan

(2) MS.M memory scan

**NOTE:**

**Memory frequency scan can be operated with battery save function as save memory scan.**

## ③ Operation

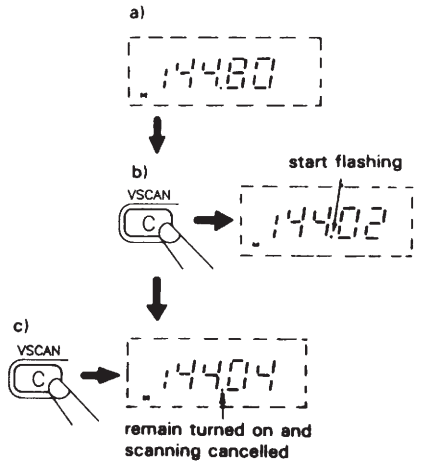
- Dial-frequency scan

(1) 1 MHz band scan

**a)** Set the Transceiver to the dial-frequency mode.

**b)** Press the C/VSCAN button. A short beep tone will be generated and the scanning will start at the displayed frequency. The decimal point keeps flashing during scanning operation.

**c)** Press the C/VSCAN button again to cancel the scanning.



**Information**

- Press either the */ MR /ENT button or C/VSCAN button to cancel scanning. The frequency displayed as button is depressed becomes the operating frequency.
- Be sure that the Transceiver is in the dial-frequency mode before starting the scan, especially right after the memory mode is used.

(2) Partial Band Scan

**a)** Store scan start frequency into M18($\overline{M}$8 in 20 channel mode)

**b)** Store scan stop frequency into M19($\overline{M}$9 in 20 channel mode)

**c)** Start the 1 MHz band scan operation(see page 23)

**d)** Press button "6"

**e)** The transceiver will enter partial band scan

**Note:** If either M18($\overline{M}$8) or M19($\overline{M}$9) is vacant, then the partial band scan will become full band scan.
Press button "6" will toggly switch 1 MHz band scan and partial band scan.

**• Memory frequency scan**

This function allows you to scan frequencies programmed in the memory. Two types memory scans are available;

**(1)** All memory scan: to scan every memory frequency in 20 or 40 channel mode.

**(2)** MS.M scan: To scan signified memory frequencies.

**Information**

Memory frequency scan can be operated with battery save function as save memory scan, scanning with intervals of 600ms.

**(1) All memory scan**

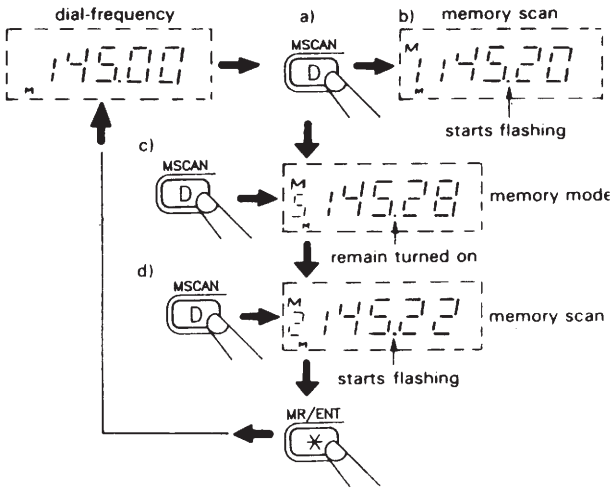
This function allows you to scan the memory frequencies. A vacant address number is automatically skipped.

**a)** Press the D/MSCAN button.

**b)** The memory scanning will start at the following memory address number used lastly. The decimal point starts flashing and keeps flashing scanning operation.

**c)** Press the D/MSCAN button again to cancel the memory scan. The Transceiver will enter the memory mode.

**d)** The memory scan resumes by pressing the D/MSCAN button again.



**(2) MS.M scan**

This function allows you to scan the specified memory frequencies only.

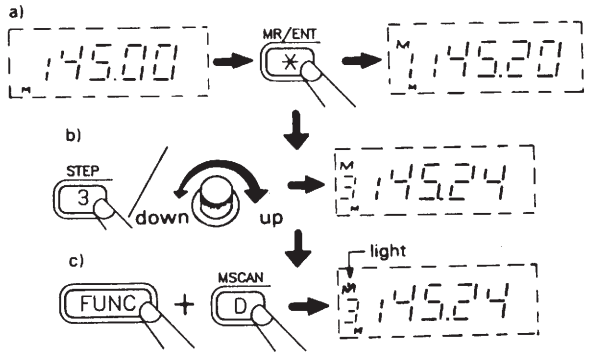
① **Setting the memory address number for MS.M scan.**

**a)** Press the */ MR /ENT button for the memory mode.

**b)** Display the desired address number either with numeral button or the rotary channel selector.

**c)** Press the D/MSCAN button while pressing the Function button"▼" will be indicated above "M" on the display and the displayed frequency is programmed for the MS.M scan.

**d)** Repeat the above procedure and program the desired frequencies for the MS.M scan.



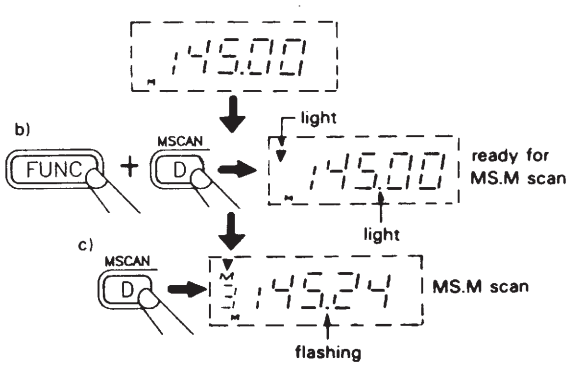

**NOTE:**

**Repeat the above procedure to delete the programmed frequency for the MS.M scan."▼" above "M" will disappear.**

② **Operation I.**

**a)** Set the Transceiver to the dial-frequency mode. Press the D/MSCAN button while pressing the Function button "▼" will be indicated above "M" on the display and the Transceiver is now ready for MS.M scan.

**b)** Press the D/MSCAN button. The MS.M scan will start.



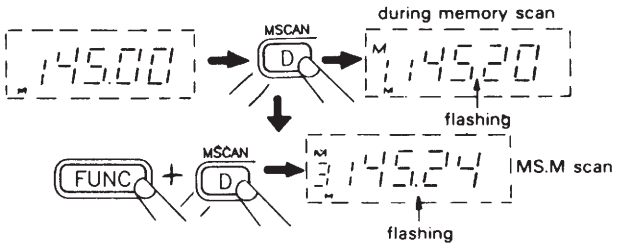

**NOTE:**

**The MS.M scan is only available when the MS.M scan frequencies have been programmed.**

③ **Operation II**

**a)** Press the D/MSCAN button for memory scan.

**b)** Press the D/MSCAN button while pressing the Function button during memory scanning. The MS.M scan will start.




**Information**

The MS.M scan and all MS.M scan can be cancelled by depressing the D/MSCAN button while pressing the Function button. The memory scan will start.

**NOTE:**

**(1) "▼" above "M" on the display is an indicator for MS.M scan.**

**(2) The MS.M scan is only available when the MS.M scan frequencies have been programmed.**

**(3) In memory frequency scan, either the all memory or MS.M scan can be confined to single memory bank.**

**(4)There are four banks in 40 channel mode**

**bank 0 : M0 - M9**

**bank 1 : M10 - M19**

**bank 2 : M20 - M29**

**bank 3 : M30 - M39**

**(5)There are two banks in 20 channel mode**

**bank 0 : M0 - M9**

**bank 1 : $\overline{M}$0 - $\overline{M}$9**

## 11 Switching the Transmit Power [B/PWR/PL Button]

This is to switch the transmit power. Three power levels are available for the H/H Transceiver. Select high, moddle or low power depending on your purpose.

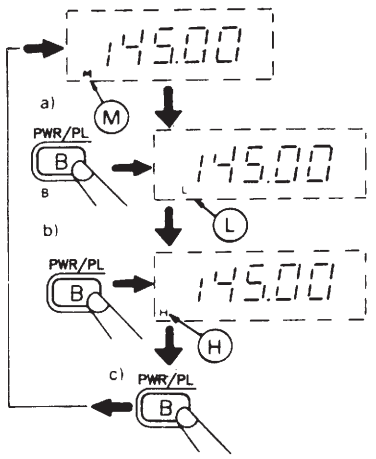
High power (H is displayed).....5.0W
Middle power (M is displayed).....2.5W
Low power (L is displayed).....0.35W

**Procedure**

**a)** Press the B/PWR /PL button to switch transmit power. The "M" on the display will be replaced by "L" indicating that the transmit power is switched to low.

**b)** Press the B/PWR /PL button again for high power "H" will be displayed.

**c)** Press the B/PWR /PL button again. The middle power will be returned.




**Information**

The Transceiver is initially set to the middle at the factory.

## 12 Dual-Watch Operation [1/Dual Button]

This function allows you to watch two different frequencies. The Transceiver is capable of following types of dual-watch operation.

**(1)** Listen on the dial-frequency and the memory frequency under M1.
**(2)** Listen on the dial-frequency and one of the memory frequencies.
**(3)** Listen on the dial-frequency and a memory frequency under scanning.

**Information**

- The word "DUAL" is indicated on the display during dual-watch operation.
- The dial-frequency can be changed during dual-watch operation.
- During dual-watch operation, the Transceiver listens on memory frequency once every three seconds and instantaneously displays its frequency.
- Dual-watch operation pauses while the memory frequency is being received.
- When a signal is received on the dial-frequency during dual-watch operation, the signal will be heard interruptedly as the Transceiver leaves the dial-frequency once every three seconds.
- Rotate the squelch control fully counterclockwise to pause the dual-watch operation with the memory frequency to listen.

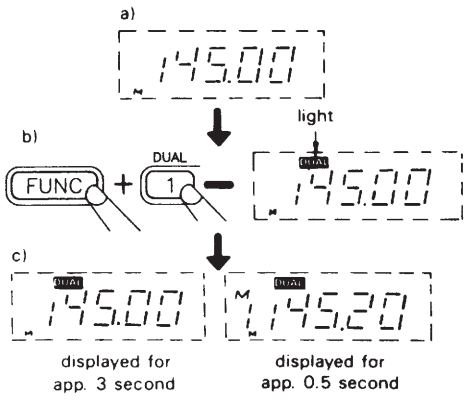
**NOTE:**

**(1)** During dual-watch operation, transmission is only available at the dial-frequency.
**(2)** Press the PTT button to transmit. The dial-frequency is displayed and you can transmit at the dial-frequency. Release the PTT button to return to dual-watch.
**(3)** When a signal is received at the memory frequency, release the dual-watch operation and recall the memory frequency for communication.

### ① Dual-watch on the dial-frequency and the memory frequency under M1.

**Procedure**

**a)** Set the Transceiver to the dial-frequency mode.
**b)** Press the 1/DUAL button while pressing the Function button. A word "DUAL" will appear on the display to indicate the dual-watch operation.
**c)** Press the */ENT button "DUAL" will disappear and the dual-watch will be cancelled.

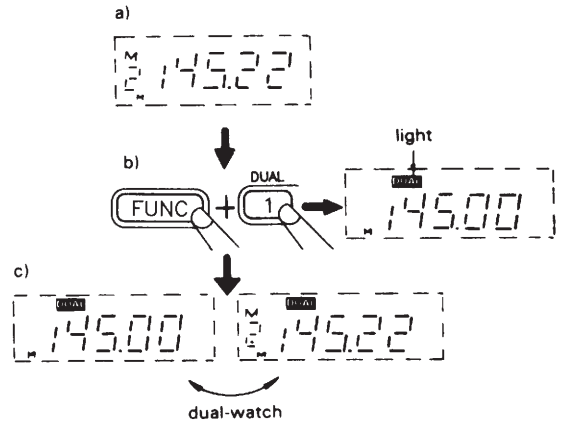



**NOTE:**
**If no frequency has been stored in memory address number M1, the dual-watch operation is unavailable. You will hear a low-toned short beep when you press the 1/DUAL button informing you an incorrect entry.**

## ② Dual-watch on the dial-frequency and a memory frequency. (or call frequency)

**Procedure**

**a)** Recall a memory frequency you wish to use in the dual-watch.
**b)** Press the 1/DUAL button while pressing the function button. A word "DUAL" will appear on the display to indicate the dual-watch operation.
**c)** The display will alternately indicate the dial-frequency and a select memory frequency.

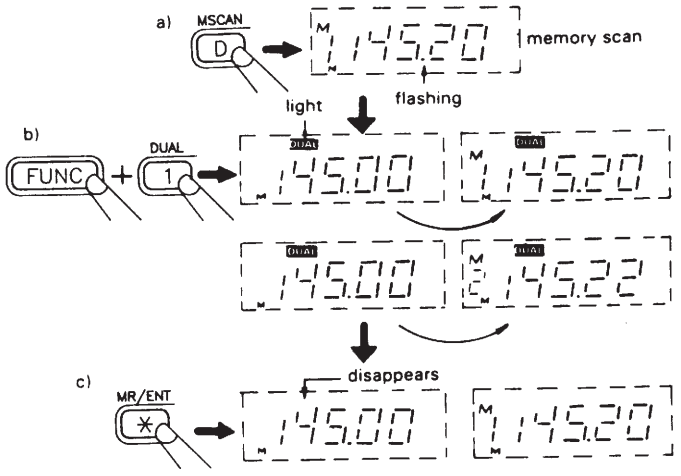


**NOTE:**

**(1)** If no frequency has been stored in memory, the dual-watch operation is unavailable. You will hear a low-toned short beep when you press the 1/DUAL button informing you an incorrect entry.

**(2)** In dual-watch operation call frequency is considered as one of memory frequencies. That is, you can have dual-watch operation to listen on dial-frequency and call frequency.

## ③ Dual-watch on the dial-frequency and a memory frequency under scanning in sequence.




**Procedure**

**a)** Set the Transceiver to the memory scan mode.

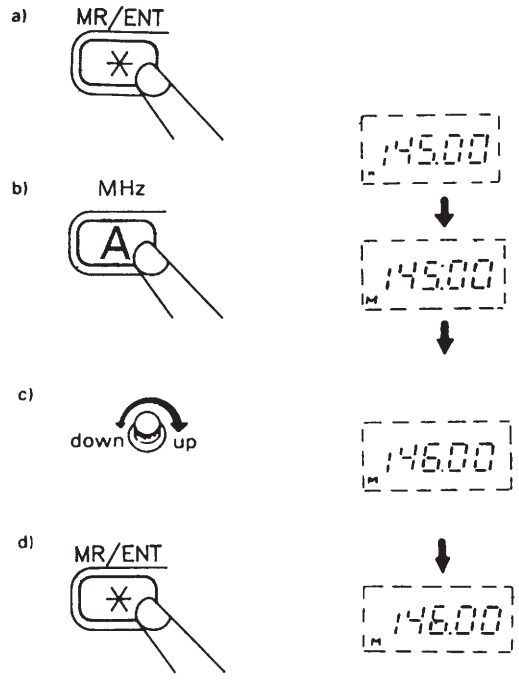
**b)** Press the 1/DUAL button while pressing the Function button. A word "DUAL" will appear on the display to indicate the dual-watch operation. The display will sequentially indicate the dial-frequency and the memory frequencies under scanning one by one.

**c)** Press either the C/VSCAN button or */ MR /ENT button to cancel the dual-watch operation and to set the dial-frequency mode. The Transceiver will be set to either the dial-frequency mode or the memory mode depending on the condition at which the button is depressed.

## 13 MHz Rotary Step [A/MHz]

**Procedure**

**a)** Press the "*/MR/ENT" key to set the status in VFO mode.
**b)** Press the "A/MHz" the enable the MHz Rotary step function.
**c)** Rotate the rotary channel to increase or decrease the operating frequency in MHz increment.
**d)** Press "A/MHz" or "*/MR/ENT" to return to A/MHz VFO mode.



## 14 Changing the Frequency Step [3/STEP Button]

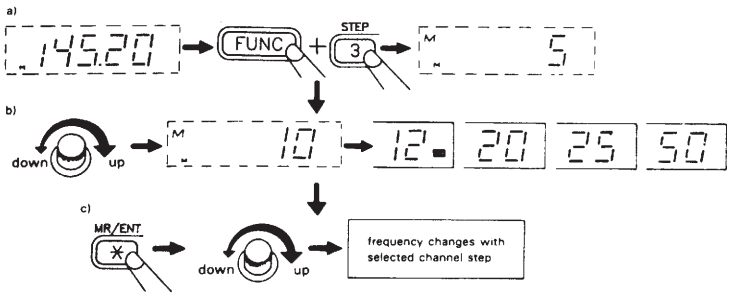
You can set the Transceiver's step rate to 5kHz, 10kHz, 20kHz, 25kHz or 50kHz.

**Procedure**

**a)** Press the 3/STEP button while pressing the Function. The frequency display will disappear and replaced by the current step rate.

**b)** Rotate the rotary channel selctor. The six step rates will be sequentially indicated.

**c)** Select the desired step rate. Then press the */ MR/ENT button to return to the previous dial-frequency.




**Information**

- When the step rate is set to 25kHz, 12.5kHz, the kHz digit of the dial-frequency will be shown in a small black box on the right side of the display.
- The step rate is initially set to 10kHz at the factory.

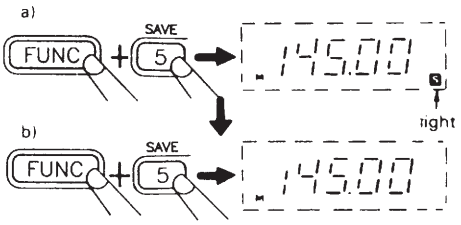
## 15 Battery-Save Function [5/SAVE Button]

This function allows you to reduce the current drain to 1/3 during receiver standby. The receiver will be activated once every single second.

**Procedure**

**a)** Press the 5/SAVE button while pressing the Function button A "S" will appear on the display to indicate that the battery-save function is enabled.

**b)** Press the 5/SAVE button again while pressing the Function button to release the battery saver.




**NOTE:**
**The battery saver is disabled during dual-watch operation and scanning.**

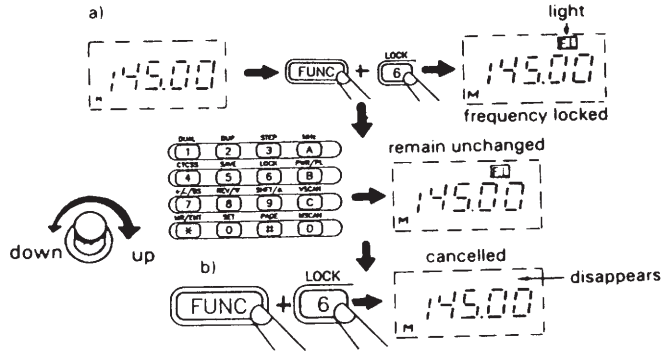
## 16 Frequency Lock [6/LOCK Button]

This feature allows you to lock the frequency and operating mode to prevent improper operation. You can also use this feature during scanning and dual-watch operation.

**Procedure**

**a)** Press the 6/LOCK button while pressing the Function button A "FL" will appear on the display to indicate that the frequency and operating mode is locked.

**b)** Press the 6/LOCK button again while pressing the Function button to unlock them.



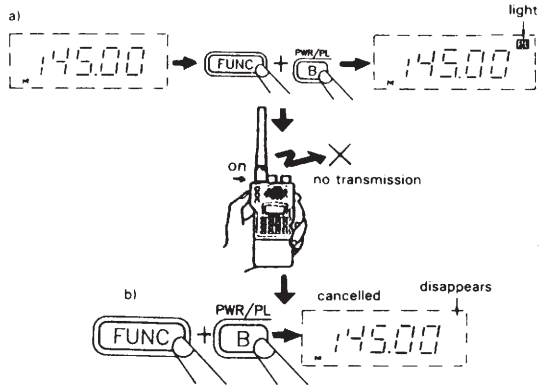
## 17 PTT Lock [B/PWR/PL Button]

This function allows you to disable the PTT button to reduce the chance of accidental transmission.

**Procedure**

**a)** Press the B/PWR/PL button while pressing the Function button A "PL" will appear on the display and the PTT button is disabled.

**b)** Press the B/PWR/PL button again while pressing the Function to enable the PTT button.




## 18 Switching Pause Scan and Busy [7/+/-/BS Button]

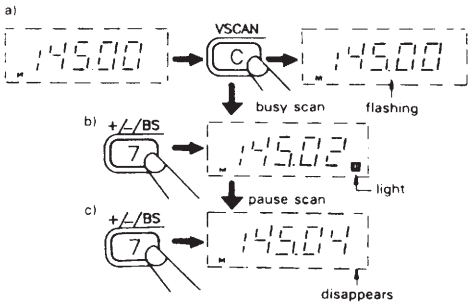
This function allows you to select either pause scan or busy scan. The Transceiver is initially set to pause scan at the factory. (see 10 Scanning in page 22)

**Procedure**

**a)** Set the Transceiver to the scanning mode.

**b)** Press the 7/BS button during scanning, a "B" will appear on the display to indicate the busy scan.

**c)** Press the 7/BS button again to return to the pause scan, the "B" will disappear.



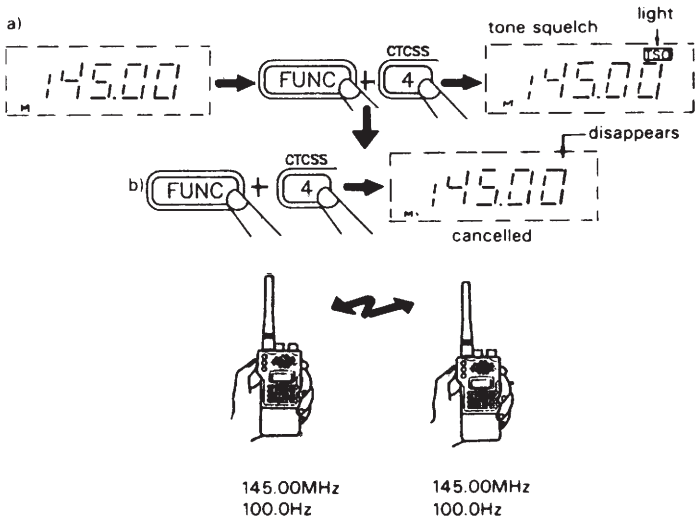
## 19 Tone Squelch Control [4/CTCSS Button]

Tone squelch operation is available when an optional tone squelch unit CTS145 is installed.

**NOTE:**

**(1) Communication between stations incapable of tone squelch operation or having different tone frequencies is unavailable.**

**(2) Select and program the required tone frequency before attempting tone squelch operation.**




**Procedure**

**a)** Press the 4/CTCSS button while pressing the Function button "T" and "SQ" will appear on the display to indicate that the tone squelch is turned on.

**b)** Press the 4/CTCSS button again while pressing the Function button to disable the tone squelch "T" and "SQ" will disappear.

**NOTE:**
**(1) "T" and "SQ" will be displayed even though the tone squelch unit CTS145 is not installed.**

TO set the CTCSS (PL) tone frequency:

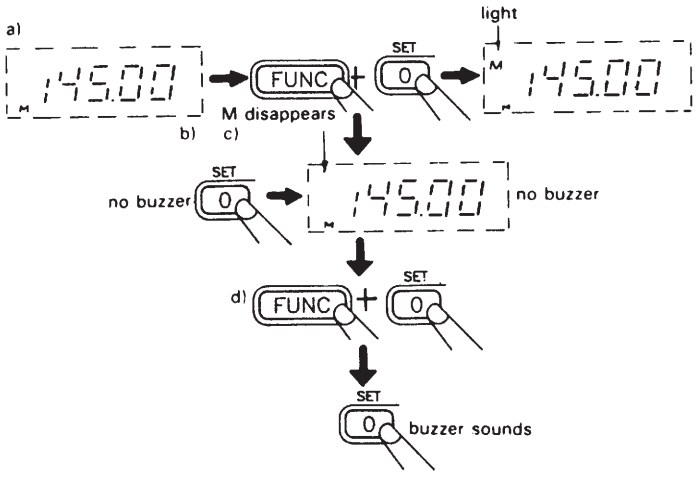
1. Press [FUNC]+[SET], then [CTCSS].
2. Dial the CTCSS tone frequency.
3. Press [MR/ENT]. To activate the tone; (also see next page.)
4. Press [FUNC]+[+/-/BS] to enable repeater offset.
5. Press [FUNC]+[CTCSS] to turn on CTCSS encode.

## 20 Special Functions with SET Button [0/SET Button]

Press the 0/SET button while pressing the Function button to enter the set mode in the set mode, special functions listed in the table below are available.

**NOTE:**
**(1) A "M" will be indicated on the display when the Transceiver is in the set mode, However, there are no indicators on the display for special functions.**
**(2) Press the */MR/ENT button to return to the dial-frequency mode. Repeat the same procedures to release special functions.**

| Button | Special functions in set mode |
|---|---|
| 0/SET | Muting the buzzer |
| 1/DUAL | Disabled (low beep tone) |
| 2/DUP | Disabled (low beep tone) |
| 3/STEP | Switching the 100 KHz and 1 MHz channel step (when the channel selector rolated while pressing the function button) |
| 4/CTCSS | Recalling the tone frecuency |
| 5/SAVE | Turning on/off the Auto-Power Off (APO) |
| 6/LOCK | Enabling and disabling the rotary channel selector when frequency lock is turned on |
| 7/+/-/BS | Disabled (low beep tone) |
| 8/REV/▼ | Disabled (low beep tone) |
| 9/SHFT▲ | Disabled (low beep tone) |




**Procedure**

**a)** Press the 0/SET button while pressing the Function button A "M" will appear on the display to indicate the set mode.
**b)** Press the 0/SET button.
**c)** The buzzer is muted and pressing a button will not generate any sounds.
**d)** Press the 0/SET button while pressing the Function button and then press the 0/SET button again by itself to enable the buzzer.

**NOTE:**
**(1) The display does not indicate whether the buzzer is muted or not.**

**Muting the buzzer**

The H/H Transceiver produces the following sounds.
**(1)** Beeping alarm.....generated during Auto-Power Off operation and when receiving signals during pager operation.
**(2)** Low-toned beep..... indicates improper key entry.
**(3)** High-toned short beep... indicates proper key entry.

## ① Recalling the tone frequency

You can select any one of thirty-eight tones which have been programmed in the microprocessor. The selected tone frequency can be stored in memory.

**Available Tone Frequencies (in Hz)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 67.0 | 71.9 | 74.4 | 77.0 | 79.7 | 82.5 | 85.4 | 88.5 |
| 91.5 | 94.8 | 97.4 | 100.0 | 103.5 | 107.2 | 110.9 | 114.8 |
| 118.8 | 123.0 | 127.3 | 131.8 | 136.5 | 141.3 | 146.2 | 151.4 |
| 156.7 | 162.2 | 167.9 | 173.8 | 179.9 | 186.2 | 192.8 | 203.5 |
| 210.7 | 218.1 | 225.7 | 233.6 | 241.8 | 250.3 | | |

**NOTE:**

**(1) This feature is only available when an optional tone squelch unit CTS145 is installed.**

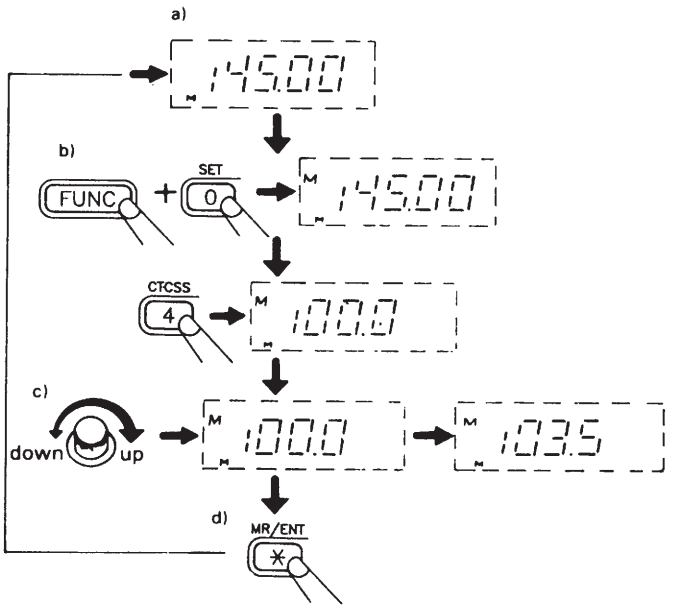
**Procedure**

**a)** Press the 0/SET button while pressing the Function button. A "M" will appear on the display to indicate the set mode.

**b)** Press the 4/CTCSS button. The dial-frequency on the display will disappear and be replaced by a tone frequency. (88.5Hz) is initially set at the factory.

**c)** Rotate the channel selector for a desired tone frequency.

**d)** Press the */MR/ENT button to complete the setting. The previous mode will be returned.



## ② Auto-Power Off

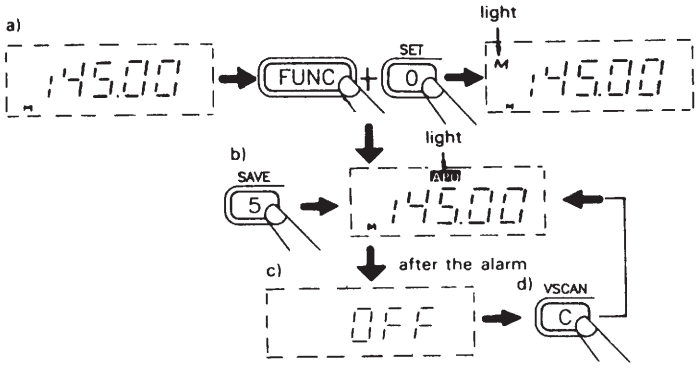
An Auto-Power Off feature is built in to conserve power. When the Transceiver is left unused with the power switch turned on for 30 minutes, the Transceiver will generate beeping alarm. After the alarm, the Transceiver will automatically extinguish the most of the display and reduce the power consumption to approximately 5mA.

**Procedure**

**a)** Press the 0/SET button while pressing the Function button A "M" will appear on the display to indicate the set mode.
**b)** Press the 5/SAVE button and the word "APO" will appear on the display to indicate Auto-Power Off.
**c)** When the operating buttons have not been operated or a signal has not been received for 30 minutes, the beeping alarm is generated.
**d)** The H/H Transceiver will extinguish the most of the display to reduce the power consumption. The frequency will disappear and be replaced by a word "OFF" (i.e. the Transceiver is in the sleep standby mode.)
**e)** Press the C/VSCAN button to release sleep standby. The power will be turned on and the Auto-Power Off timer will be\extended for another 30 minutes. i.e. the Transceiver returns to the condition of (b).

**NOTE:**

**(1) When the "OFF" replaces the frequency on the display, both the receiver and transmitter are disabled.**
**(2) Although the Auto-Power Off function enables to reduce the power consumption to a minimum, make sure that the power switch is turned off when you finish operation.**
**(3) Every operating button is disabled in the sleep standby mode except the C/VSCAN button.**



## Automatic Repeater Offset:

1. Select VFO mode (No "M" in display).
2. Press [FUNC]+[2], a+-will be displayed. The proper repeater + or - offset will now be set by the radio, Repeat the process to toggle off the automatic repeater offset.
3. The offset frequencies for auto repeater:
   - 144.00 to 145.095 MHz : 0 (simplex)
   - 145.10 to 145.495 MHz : -0.6 KHz
   - 145.50 to 145.995 MHz : 0 (simplex)
   - 146.00 to 146.395 MHz : +0.6 KHz
   - 146.40 to 146.595 MHz : 0 (simplex)
   - 146.60 to 146.995 MHz : -0.6 KHz
   - 147.00 to 147.395 MHz : +0.6 KHz
   - 147.40 to 147.595 MHz : 0 (simplex)
   - 147.60 to 147.995 MHz : -0.6 KHz

## 23 Exchange the Transmit and Receive Frequency during Repeater Operation [8/REV/▼Button]

This feature allows you to exchange the transmit and receive frequencies during repeater operation. You can check if the other station is accessible.

**Procedure**

**a)** Set the Transceiver to the repeater mode.

**b)** Press the 8/REV/▼ button again while pressing the Function button "-" or "+" on the display will start flashing and the transmit and receive frequencies will start flashing and the transmit and receive or "+" on the display will start flashing and the transmit and receive frequencies will be reversed.

**c)** Press the 8/REV/▼ button again while pressing the Function button "-" or "+" on the display will stop flashing and remain turned on. The transmit and receive frequencies will be reversed again and the regular repeater-mode will be returned.

**NOTE:**
**This feature is only available during repeater operation and when the transmit frequency is within the operating frequency range.**

## ① Preparation for paging

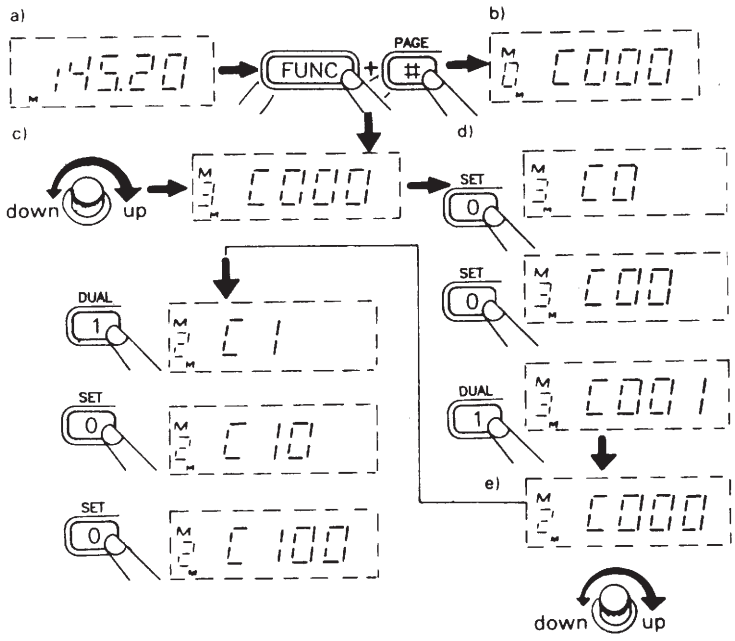
1) Program an individual code.
2) Program a group code.

**NOTE:**
**A group code must be common for all members of the group. Both individual and group codes must be a number of 3 figures.**

**Procedure**

**Example: To program an individual code 001 for the code memory address M3 and a group code 100 for M2.**

**a)** Press the #/PAGE button while pressing the Function button.
**b)** The frequency on the display will disappear and be replaced by "M0 C000".
**c)** Code memory address M0 through M3 are used for paging operation. They are indicated on the display successively by rotating the channel selector. (the initial display is M0 C000).
**d)** Rotate the channel selector for M3 and press numeral buttons 0,0 and 1. A long beep tone will be generated to inform you that programming of the individual code is somplete.
**e)** Rotate the channel selector for M2 and press numeral buttons 1,0 and 0. A long beep tone will be generated to inform you that programming of the group code is complete.



**Information**

A 3-figured individual and group code are composed of three DTMF signals.

## ② Operating

**[Paging Station]**

**• Individual paging**

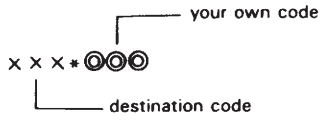
The operating frequency should have been selected prior to usage.

**a)** Program your individual code and a group code.

**b)** Program an individual code of the station to be paged. Press the #/PAGE button while pressing the Function button. Rotate the channel selector for the code memory address M1 and set the desired individual code with numeral buttons.

**c)** Press the #/PAGE button for the dial-frequency mode. A word "PAG" will appear on the display.

**d)** Press the PTT button. DTMF signals, the destination code followed by your own code, will be automatically transmitted. (DTMF signal tone can be heard.)



**• Group paging**

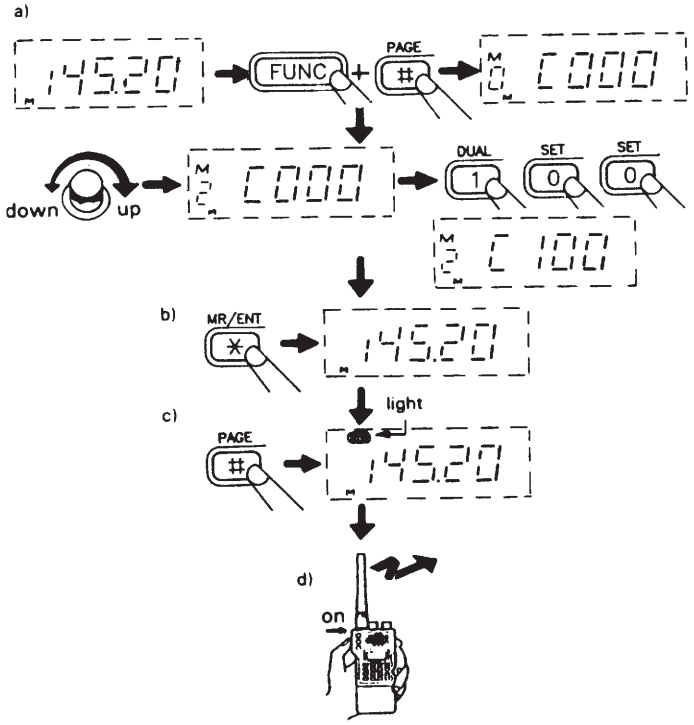
The operating frequency should have been selected prior to usage. Program a group code to call member stations.

**a)** Press the #/PAGE button while pressing the Function button. Rotate the channel selector for the code memory address M2 and set the group code with numeral buttons.

**b)** Press the */MR /ENT button for the dial-frequency mode.

**c)** Press the #/PAGE button for the paging mode. A word "PAG" will appear on the display.

**d)** Press the PTT button. DTMF signals, the group code followed by your own code, will be automatically transmitted. (DTMF signal tone can be heard.)



## [Receiving Station]

**•Individual paging**

The operating frequency should have slelcted prior to usage.

**a)** Program your own individual code and a group code.

**b)** Press the #/PAGE button for the paging mode. A word "PAG" will appear on the display.

**c)** When the received individual code is identical to the stored your own code, beep sounds will be generated and a "PAG" will start flashing to indicate that you have been paged. A frequency on the display will disappear and be replaced by an individual code of the paging station, M0 CXXX.

**d)** Press the PTT button to respond. DTMF signals will be transmitted in turn.

**e)** Press the #/PAGE button and release the paging mode to communicate.

**•Group paging**

The operating frequency should have been selected prior to usage.

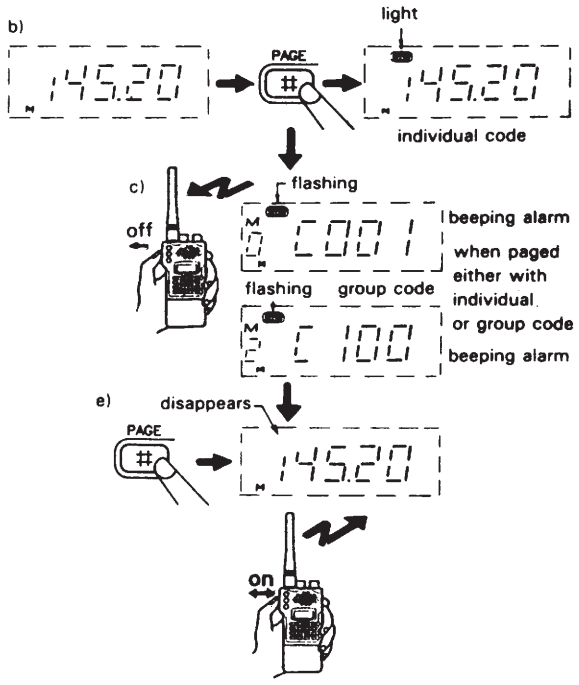
**a)** Program a group code.

**b)** Press the #/PAGE button for the paging mode. A word "PAG" will appear on the display.

**c)** When the received group code is identical to the stored group code, beep sounds will be generated and a "PAG" will start flashing to indicate that you have been paged. A frequency on the display will disappear and be replaced by the group code. M2 CXXX.

**d)** Press the PTT button to respond. DTMF signals will be transmitted in turn.

**e)** Press the #/PAGE button and release the paging mode to communicate.



**Information**

- A "PAG" on the display stops flashing and remains turned on when any operating button is pressed.
- Press the Function button to stop the beep sound halfway.
- A group code will be transmitted when the PTT button is pressed with M3 (your own individual code) selected (This is an improper operation).
- An unidentified code received will appear on the display when the reception is incomplete and the individual code of the paging station is not clear. Therefore, the paging station cannot be identified.

## Examples of paging operation

**• Individual paging**

Station A
Individual Code M3 001
Group Code M2 100

**a)** Press the #/PAGE button for the paging mode.

**b)** Press the #/PAGE button while pressing the Function button. Program the individual code of Station B 002 for memory address M1.

**c)** Press the PTT button Individual code of Station B and of its own will be transmitted.

**d)** A pager beep sound will be generated and a "PAG" will start flashing "M0 C002" will appear on the display to indicate that Station B is cailing back.

**e)** Press the #/PAGE button to release the paging mode and start communication as usual.

Station B
Individual Code M3 002
Group Code M2 100

**a)** Press the #/PAGE button for the paging mode.

→ **b)** A pager beep sound will be generated and a "PAG" will start flashing. "M0 C001" will appear on the display to indicate that Station A is paging.

← **c)** press the PTT button to call back Station A in return. Individual codes of Station A and of its own will be transmitted.

**d)** Press the #/PAGE button to release the paging mode and start communication as usual.

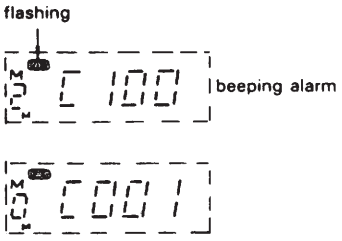
**•Group paging**

Station A
Individual Code M3 001
Group Code M2 100

Recall the stored group code in code memory address M2 and press the PTT button. Stations having the identical group code will be page

Station B
Individual Code M3 002
Group Code M2 100

"M2 C100" will appear on the display to indicate that the Station is paged with the group code.




Rotate the channel selector for memory address M0 to display the individual code of paging station.

Station C
Individual Code M3 003
Group Code M2 100

"M2 C100" will appear on the display to indicate that the Station is paged with the group code if the individual code of the paging station cannot be identified.

The unidentified code will be stored in M0.

### ③ Code squelch operation

- Press the #/PAGE button for code squelch mode A "CSQ" will be indicated on the display.
- A group code will be transmitted enabling the code squelch operation. A noise can only be heard from the speaker when a signal from the station having the identical group code is received.
- A group code programmed in the code memory address M2 is used for the code squelch operation.
- Combined with an optional tone Squelch Unit CTS145, your radio will remain quiet unless certain stations using the same group code and the tone frequency call you.
- In the code squelch mode, the M2 code is always used regardless of the selected code memory channel.

**NOTE:**
**The group code will be transmitted for approximately 0.3 second. Start communications after the code has been transmitted.**

## 22 Repaeter Operation [7+/-/BS Button]

### 1. Repeater Operation

This function allows you to use your Transceiver with a repeater.

**Procedure**

**a)** Set your Transceiver to the output frequency of the repeater you wish to use.
**b)** Press the 7/+/-/BS button while pressing the Function button "-" will appear on the display to indicate that repeater operation is enabled.
**c)** Press the 7/+/-/BS button again while pressing the Function button "-" on the display will be replaced by "+".
**d)** Press the 7/+/-/BS button again while pressing the Function button to release the repeater operation "+" will disappear and the simplex operation will be returned.

**Information**

"-" and "+" on the display indicates that the shift direction of the transmit frequency is negative or positive respectively. The amount by which the transmit frequency is shifted is referred to as the shift frequency and is initially set to 0.60 MHz VHF, and 5.0 MHz for UHF.

**NOTE:**
**Adding or subtracting the shift frequency from the receive frequency makes the transmit frequency. Be sure that the transmit frequency is within the operating frequency range. A "OFF" will appear on the display of the H/H Transceiver and transmission is disable if the transmit frequency happens to be out of the range.**

## 2. Paging Operation

For the PAGE or C.SQ operation by using the repeater, use the procedure described below.

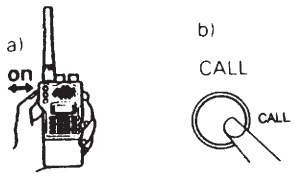
**1)** Set your Transceiver ready for the repeater by using the procedure described with "1 Repeater Operation" above.
**2)** Press the CALL button while pressing the PTT button to start the repeater operation.
**3)** Set the PAGE or C.SQ mode and press the PTT button.

## 3. How to call the Repeater (Call Button)

You can generate 1750Hz tone by pressing the CALL button while the PTT button is held depressed. A tone will be generated as long as the CALL button is held.

**Procedure**

**a)** Press the PTT button to transmit.
**b)** Press the CALL button while the PTT button is held depressed.




**• Paging operation through a repeater**

When making the PAGE C.SQ operation by way of the repeater, perform the following procedure.

**a)** Perform the operation of item [21] (1) to enter the state that the repeater operation is feasible.
**b)** While pressing the PTT button, press the CALL button to operate the repeater.
**c)** Set the PAGE or C.SQ mode and press the PTT button.

**NOTE:**

**• The transceiver is capable to page other stations through a repeater. During simplex operation, DTMF signals for paging operation will be transmitted approximately 0.25 second after the PTT button is pressed. However, during repeater operation, the time lag is extended to approximately 0.45 second. Some repeater stations may not respond quick enough for pager operation. In such a case, turn on the Auto-Power Off function to extend the time lag to approximately 0.75 second.**

## Automatic Repeater Offset:

1. Select VFO mode (No "M" in display).
2. Press [FUNC]+[2], a+-will be displayed. The proper repeater + or - offset will now be set by the radio, Repeat the process to toggle off the automatic repeater offset.
3. The offset frequencies for auto repeater:
   - 144.00 to 145.095 MHz : 0 (simplex)
   - 145.10 to 145.495 MHz : -0.6 KHz
   - 145.50 to 145.995 MHz : 0 (simplex)
   - 146.00 to 146.395 MHz : +0.6 KHz
   - 146.40 to 146.595 MHz : 0 (simplex)
   - 146.60 to 146.995 MHz : -0.6 KHz
   - 147.00 to 147.395 MHz : +0.6 KHz
   - 147.40 to 147.595 MHz : 0 (simplex)
   - 147.60 to 147.995 MHz : -0.6 KHz

## 23 Exchange the Transmit and Receive Frequency during Repeater Operation [8/REV/▼Button]

This feature allows you to exchange the transmit and receive frequencies during repeater operation. You can check if the other station is accessible.

**Procedure**

**a)** Set the Transceiver to the repeater mode.

**b)** Press the 8/REV/▼ button again while pressing the Function button "-" or "+" on the display will start flashing and the transmit and receive frequencies will start flashing and the transmit and receive or "+" on the display will start flashing and the transmit and receive frequencies will be reversed.

**c)** Press the 8/REV/▼ button again while pressing the Function button "-" or "+" on the display will stop flashing and remain turned on. The transmit and receive frequencies will be reversed again and the regular repeater-mode will be returned.

**NOTE:**
**This feature is only available during repeater operation and when the transmit frequency is within the operating frequency range.**

## 24 Setting a Shift Frequency [9/SHIFT/▲Button]

A shift frequency for repeater operation can be changed within the limits of 0.00MHz to 39.995MHz. An independent shift frequency can be programmed for each memory.

**Procedure**

**a)** Press the 9/SHIFT/▲ button while pressing the Function button. The current shift frequency in memory will be displayed. (The shift frequency is initially set to 0.60MHz)
**b)** Select the desired shift frequency with the rotary channel selector or numeral buttons.
**c)** Press the C/VSCAN button to return to the previous mode.

# TROUBLESHOOTING

**Q: The frequency display is weak.**
**A:** The battery voitages are low. Replace the batteries.

**Q: The unit does not receive.**
**A:** Press the squelch button and see if any sound comes out of the speaker.

**A:** Isn't the squelch control rotated fully clockwise?
Rotate back the squelch control counterclockwise for the threshold setting.
**A:** Isn't your Transceiver set for tone squelch operation? (when CTS145 is installed.)
Release the tone squelch operation.
**A:** Isn't the volume control rotated fully counterclockwise?
Rotate back the volume control for comfortable listening level.
**A:** Isn't your Transceiver set for paging or code squelch operation? (when DTF145 is installed.)
Release the paging or code squelch operation.

**Q: The Transceiver appears to receive only the strong signals.**
**A:** Is your antenna installed properly?
Check it and install it properly.
**A:** Isn't the squelch control rotated fully clockwise?
Rotate back the squelch control for the threshold setting.

**Q: The Transceiver does not transmit.**
**A:** Doesn't the RF output indicator light dark when pressing the PTT button?
Replace batteries.
**A:** Isn't "P.L" indicated on the display?
Press the B/PWR/PL button while pressing the function button to release the PTT Lock function.

**Q: The displayed frequency cannot be changed.**
**A:** Isn't "F.L" indicated on the display?
Press the 6/LOCK button while pressing the Function button to release the Frequency Lock function.

**Q: No beep sound is generated.**
**A:** Isn't the buzzer disabled?
Press the 0/SET button while pressing the Function button and then press the 0/SET button to enable the buzzer.

# SPECIFICATION

## AT-201 GENERAL

- Frequency Range.....144.00 to 145.995MHz
  Modulation Type.....F3
  Microphone Input Impedance.....600Ω
  Speaker Impedance.....8Ω
  Operating Voltage Range.....5.0 to 16.0V
  Nominal Input Voltage.....7.2V
  Current Drain.....During Transmission
  13.8V Hi. app.950mA (5W)
  Mid. app.650mA (2.5W)
  7.2V Hi. app.650mA (2W)
  Mid. app.650mA (2W)
  13.8V/7.2V Lo. app.350mA (0.35W)
  Standby app.35mA
  Battery Save app.13mA
  Auto Power Off app.5mA
  Dimensions.....83.5 (height) 55 (width) 31 (depth)(mm)
  Without power pack
  & protrusion
  Weight.....185g without power pack & antenna
  Operating Temperature.....–10°C~+55°C

*Applicable Frequency Range.....(1) 144.00 to 145.995MHz
(2) 144.00 to 147.995MHz (5) 138.00 to 173.995MHz
(3) 142.00 tO 154.995MHz (6) 100.00 to 179.995MHz
(4) 130.00 to 169.995MHz

### RECEIVER

Reception Type.....Double-Conversion Superheterodyne
Intermediate Frequency.....first 1F 21.8MHz
Second 1F 455kHz
Sensitivity (12db SINAD).....-10dBμ
Sighal-to-Noise Ratio for 1 μV.....30dB or better
Squelch Sensitivity.....0.1°μV
Audio Output Power..... 250mW (at 10% distortion with 8°∞)

### TRANSMITTER

RF Output Power.....HI: 1W with CBC145
2.5W with SBC145
2W with RBP072/RBP120
5W with RBP120
Mid: 2.5W with RBP072
Lo: 0.35W
Frequency Modulation Method.....Reactance
Maximum Frequency Deviation.....±5kHz
Spurious Signal Ratio.....better than -60dB

**The above listed specifications are guaranteed in frequency ranged (1).(2). only.**

# SPECIFICATION

## AT-401

### GENERAL

Frequency Range.....430.00 to 439.995MHz
Modulation Type.....F3
Microphone Input Impedance.....600Ω
Speaker Impedance.....8Ω
Operating Voltage Range.....5.0 to 16.0V
Nominal Input Voltage.....7.2V
Current Drain.....During Transmission
13.8V Hi. app. 1300mA (5W)
Mid. app.950mA (2.5W)
7.2V Hi. app.900mA (2W)
Mid. app.900mA (2W)
13.8V/7.2V Lo. app.480mA (0.35W)
Standby app.38mA
Battery Save app.14mA
Auto Power Off app.5mA
Dimensions.....83.3 (height) 55 (width) 31 (depth)(mm)
Without power pack
& protrusion
Weight.....185g without power pack & antenna
Operating Temperature.....–10°C~+55°C

### RECEIVER

Reception Type.....Double-Conversion Superheterodyne
Intermediate Frequency.....first 1F: 23.05MHz
Second 1F: 455kHz
Sensitivity (12db SINAD).....-10dBμ
Sighal-to-Noise Ratio for 1 μV.....30dB or better
Squelch Sensitivity.....0.1μV
Audio Output Power.....250mW (at 10% distortion with 8Ω)

### TRANSMITTER

RF Output Power.....HI:0.8W with CBC145
2W with SBC145
2W with RBP072/RBP120
5W with RBP120
Mid: 2.5W with RBP072
Lo: 0.35W
Frequency Modulation Method.....Reactance
Maximum Frequency Deviation.....±5kHz
Spurious Signal Ratio.....better than -60dB

ADI Communications

## ONE YEAR LIMITED WARRANTY

- ADI Communications Corp. warrants this product against defects in material and workmanship.
- In the unlikely event of any failure due to defect in material or workmanship, occuring within one year of purchase, this product will be repaired or replaced at our discretion at no charge.
- The defective product should be returned in its original packing and with proof of the date of the original retail purchase to your dealer for warranty service.
- The warranty does not cover accident, misuse, fire, flood and other Act of God, unauthorized repair or altered serial numbers.
- Some statutory regulations do not allow for the exclusion or limitation of incidental or consequential damages, nor allow limitations on how long an implied warranty lasts, therefore the above limitations may not apply to you,

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